

Institution: Bournemouth University
Unit of Assessment: 32 - Art and Design: History, Practice and Theory
<p>1. Unit context and structure, research and impact strategy</p> <p>1.1 Overview</p> <p>Bournemouth University (BU) leads and pioneers the development of knowledge and practices in computer animation, visual effects (VFX) and digital media, which has generated profound influence nationally and internationally. Its excellence has been recognised in the previous REF submission (scored 90% 4* and 10% 3* in environment), praised by prime minister and MPs, and evidenced with many national/international awards (The Times Higher Education (THE) Award, Innovate UK Excellence, Lumen prizes, SIGGRAPH, graduates continually winning Oscars, BAFTA, etc.).</p> <p>Research structures span from two core research centres, the National Centre for Computer Animation (NCCA) and the Experimental Media Research Centre (EMERGE). One EPSRC industrial doctoral training centre (Centre for Digital Entertainment, CDE) associated with the NCCA provides a powerful research engine for industrial partners and offers effective knowledge transfer channels. The unit's structures adopt a flexible network among several faculties (mainly the Faculty of Media & Communication – FMC and the Faculty of Science & Technology – FST) within the university to conduct cross-disciplinary research and reach wide sectors to generate impacts. Such inclusive structures take an open and dynamic formation to offer flexibility and freedom for researchers to explore their subject areas, deliver world-leading research outputs. Institutional and financial supports are in place across both the faculties, which coordinate the research strategy among the centres, departments and the university.</p> <p>During 2014-2021 this unit facilitated/maintained the substantial growth of research in related subject areas, supported diversification of research activities, catalysed exchange among individual specialisms and radiated the influence/impact to a wide spectrum of industry. Key achievements include:</p> <ol style="list-style-type: none"> 1) We supported more than a two-fold increase of participants in this REF, from 13.8 FTEs (REF2014) to 32.5 FTEs (REF2021) – with a well-aligned staff profile to cross-disciplinary research, represented by 6 professors, 2 associate professor, 7 principal academics, 9 senior lecturers, 7 lecturers, 3 post-doctoral researchers; and nearly a three-fold increase of postgraduate research (PGR) student completions from 12.17 (REF2014) to 41.33 (REF2021). 2) Being a leading performer, we diversified research income sources (see section 3) and received over £6.08M external funding (four-fold increase over REF2014's £1.51M) from research councils, EU H2020, charities and industrial partners, which enables us to invest in the best people and facilities to deliver cutting-edge research. 3) We implemented flexible public engagement and dissemination strategies and coordinated a range of activities (over 30 exhibitions, wide-reach BFX Festivals, Edutainment and CASA conferences, over 50 conference presentations, and 330 publications – representing 86% increase compared to REF2014) to spread influence and engage internationally with a wide range of audiences, in both academic and industrial sectors. 4) We collaborated with over 40 industrial partners and led over 15 collaborative research projects with industrial partners to facilitate knowledge exchange and generate direct impact to the related industrial sectors (for example, our KTP project with Humain Ltd was awarded the highest grade of 'Outstanding' and a Certificate of Excellence from Innovate UK). 5) We continued the success of our EPSRC-funded Industrial Doctoral Training Centre. The CDE was launched in 2009 and is run jointly with the University of Bath, with combined income of £20M (from EPSRC and industry between 2009-2021). In addition, BU's investment in a new PhD scholarship scheme (over £400k) and an EU Marie Curie COFUND post-doctoral training centre (£968k) both of which started in autumn 2020 will further build the research and impact generation capacity of the unit.

Unit-level environment template (REF5b)

NCCA (led by Zhang), established in 1989, is a recognised centre of excellence and a pioneer in the establishment of the discipline of computer animation, fusing technical developments in computer science with underlying artistic principles and practice. We develop innovative and creative work across disciplines, advancing technology and its applications; embedding, extending and consolidating core research strengths, with international success recognised over the past 30 years. The NCCA's impact and influence is generated via broad connection with industry, including internationally renowned VFX companies, MPC, DNEG, Framestore, Sony, etc., and collaboration with research institutions nationally and internationally. The Nesta Tech Nation 2016 report highlighted the NCCA's key influence to the VFX sector and national digital economy.

EMERGE (led by Garcia and Davis) links computer animation and digital media to a wider array of experimental arts practice and incorporates interdisciplinary research across the university. EMERGE is fast developing and growing, conducting research and curated exhibitions across the world about contemporary and critical art practice, media and digital arts, spatial interaction, documentary video and networked audio since 2010.

CDE (led by Zhang) is associated with the NCCA as an EPSRC Doctoral Training Centre, training doctoral researchers. It was co-founded with the University of Bath in 2009 and offers outstanding and unique opportunities to PGR students and stakeholders across the UK. The CDE works across computer animation, games, VFX and other organisations that need creative technologies. Its partners (BBC, EA, Disney Research, National Trust, et al.) are internationally famous brands, sector leaders, innovative SMEs, medical organisations, and cultural organisations.

Staff members in all research centres are active participants in both the Faculty Research Committee and the Research Degrees Committee, contributing to and informing the development, monitoring and implementation of our research strategy. There is Professorial representation from across the unit on the Faculty Executive Management team and the University's Strategic Investment Board. BU's Strategic Investment Area, Animation, Simulation & Visualisation, directly supports growth of the research capacity in this unit with strategic funding.

1.2 Research strategy

While maintaining our strength and excellence in computer animation and visual effects, we have made strategic investment to broaden our research specialisms to address societal challenges and to inspire staff/PGRs to embrace innovation. All centres and their associated researchers promote science and innovation in the service of the arts and embed a theoretical underpinning within a contemporary professional setting, which has transformed the landscapes of computer animation, VFX and digital media. Flexible, inclusive research structures and an open dynamic environment have contributed to the fast growth of research specialisms and capacity. Stressing the importance of societally relevant research alongside continuing excellence, we are implementing our unit's strategy to enhance established approaches with an explicit focus on creative innovation and engaging productively with societal challenges.

We recognise the importance of undertaking research with responsibility and integrity are committed to the Concordat to Support Research Integrity. Guided by the university's policy framework, the unit enables a culture of research integrity for good research conduct and its governance: regular training and development for researchers, supervisors and PGRs is organised; internal peer review ensures projects are designed to meet the highest standards of rigour and integrity; the integrity of potential funding opportunities and collaborations is considered before we commit to anything; ethical panels review research ethics applications and make recommendations; members of a legal team provide professional guidance and legal support for research activities; centre heads and department heads deal with queries on policies and promote good research conduct; staff are participated in various institutional panels to support execution of research policies. Any allegations of research misconduct are investigated in accordance with the university's Research Misconduct Policy and Procedures. The Faculties received no allegations of research misconduct for this unit in the REF2021 period.

Open research is embraced across the unit. Many researchers (Yang, Yu, Davis, etc.) directly benefited from the institutional Open Access Publication Fund to support gold open access publications. Deals are in place with key publishers, including Wiley, Springer and Sage, to allow BU staff to publish for free in their open access journals. Both BURO and BORDaR repositories at BU support open access of research outputs and research data. We made efforts to ensure outputs/data could reach a wide audience and create real-world impact: for example, project AniAge developed High Dimensional Heterogeneous Data to achieve/restore the cultural heritage of southeast Asia; project VISTA AR crafted digital content and animation to deploy research and VR installation at six cultural heritage sites of France and the UK.

As part of creating a healthy research environment, BU is the first owner of intellectual property assets or artefacts developed by staff during their normal duties or as the result of a task specifically assigned by BU. If BU is not restricted from doing so, BU then assigns Teaching Materials and Scholarly Materials (research papers) to their originators. This ensures that BU's resources are protected so it can fulfil its aims for the public benefit.

1.2.1 Achievement of strategic aims since REF2014

Key achievements in five distinctive aspects of our research strategy are highlighted below:

1. Research excellence and steady and sustainable growth: Our research strategy during this REF period built upon the approaches and principles laid out in REF2014, which defined computer animation as an academic research pursuit, an art-form and an industrial discipline. These principles underpin our research direction, investment and support strategies. The inclusive research structure and expanded scope supports the sustainable growth by encouraging cross faculty and cross-disciplinary research. In 2013-2020, we led and participated in 47 externally-funded research projects with income totalling £6.08M. This includes continued success in securing investment in Doctoral Training from the EPSRC (Zhang), postgraduate scholarships from the AHRC, European funding, the China Scholarship Council (CSC) and BU-industrial match-funded PhD projects. These projects enabled sustainable growth of the PGR cohort within the discipline and promoted cross-sectoral knowledge exchange. Strategic investment in staff time provided a carefully managed environment for researcher development, balancing teaching and research loads for Early Career Researchers (ECRs) as well as Experienced Researchers (ERs).

2. Societal impact: This unit has supported:

- development of the SHIVA software system (Sculpture for Healthcare Interaction and Virtual Art in 3D) (Pasko, £188k from ERDF) which helps children with physical and learning disabilities to make art creation, which won the Outstanding Digital Innovation in Teaching or Research Award at the THE awards (2015) for **benefiting the society and promoting wellbeing;**
- an internal competition to strengthen regional relationships with an aligned response to the COVID-19 crisis (Zhang): it supported Phillips to create the Paramedic Wellbeing Website - helping to maintain health and wellness for paramedics and Bray to design an app of FoodPINNER – combating supply problems during the pandemic;
- 15 industrial co-funded research projects (Zhang, Southern, Nait-Charif, et. al.) under the CDE framework which **addressed the industrial demands and magnified the research and development capacity for industrial co-founders**, e.g. co-development of 3D storyboard tool RedBoard with Hibbert Ralph Animation for the animation industry (Xiao) and emotion detection in VR using physiological signals and behavioural data at Emteq Ltd (Mavridou);
- a research collaboration of VISTA AR (Chang, €700k) to develop new digital experiences at heritage sites with innovations and marketing policies across France and England (led by University of Exeter with strategic €7.9M investment);
- over 30 international art exhibitions across the world, with audiences totalling over 2.5 million visitors, including Lumen Prize winner AfterGlow (Smith and Isley) and Submergence (Birtles), generating new ways of feeling/perceiving an artistic installation, inspiring, co-creating and supporting new forms of artistic expression;
- bespoke animation design works (£150k) for many charities (Child Bereavement, Kentish Town City Farm, Dyslexia Action, et. al.) in line with their brand guidelines (coordinated by

Unit-level environment template (REF5b)

- Truckel and Efstathiou) and the concept development of lifeboat launching innovation (Chang, £51k - match-funded with HEIF) for the RNLI, the largest UK charity that saves lives at sea;
- o continuing work (Yang, Zhang, Chang, £48k) developing medical applications with surgeons of Poole Hospital and Royal Bournemouth and Christchurch Hospitals (VR experience and simulators for surgery and sewing vessels, accurate human anatomy and medical imaging);
 - o a new model of health and employability services developed in ASPIRE project (Tang, €615k) which provides people with the tools they need to make healthier lifestyle choices and improve their wellbeing and employability.

Our research is reported in national and international publications including MIT, Royal Academy, Centre Pompidou and BBC News.

3. Collaboration in multi-disciplinary applications and artefacts: Priority has been given to two ways of catalysing collaboration on multi-disciplinary research and to specifically boost research collaboration within and beyond the EU, despite the uncertainty cast by Brexit:

1) *maximising national, EU and international collaborations within the established research culture and environment:* a dedicated dissemination fund was ring-fenced to support conference attendance and networking activities, where ECRs were given priority to support their career development, e.g. Callus' research visit to Africa to study the visual articulations of politics, which led to a successful AHRC ECR grant (£200k) in collaboration with Gore of SOAS. Three career development and staff exchange schemes, AniNex (Zhang, €432k), PDE-GIR (You, €535k) and AniAge (Yu, €1.7million) from the EU FP7 and H2020 with a particular focus on ECR training have developed broad research connections and collaborations with 28 universities and research institutions in 15 countries (EU, Asia and America). In addition our unit hosted research visits/training (artists and researchers) and staff/students exchange funded by various sources including Marie Skłodowska-Curie Actions, the Royal Society, the CSC and BU Global Fellowship, and appointed visiting professors such as world-renowned scientist, Prof Nadia Magnenat Thalmann to strengthen the existing connection and collaboration with world leading research groups (MIRALAB, Switzerland and IMI, Singapore) in computer graphics.

2) *promoting collaboration and communication via flexible research structure of co-lab and research clusters within the institution:* our unit benefits from the centralised Research Development & Support (RDS) department which provides expert research management support at institutional and faculty level and one-to-one support as needed. Liebchan (Research Facilitator, RDS) supports large, collaborative research bids in the "Animation, Simulation & Visualisation" strategic investment area, which benefits our unit directly. We are closely linked to 42 BU research centres/clusters spanning a range of disciplines which creates a dynamic environment where we collaborate with other centres on media, communication and culture research and conduct interdisciplinary research on games, sports, tourism, archaeology and medical science. In addition to the dissemination fund which is directly allocated, our unit has secured additional internal funds (Fusion, Globalisation, HEIF and strategic investment) to support applying arts/computer animation/digital media across new fields of practical and conceptual research, including organising the influential annual BFX Festival (the UK's largest visual effects, computer games & animation festival), the BU Global Festival of Learning, and hosting several international research workshops and international conferences (e.g. Edutainment 2017, CASA 2020).

4. Investment in people: People are at the heart of our research strategy. Strategic investment in PGR students and ECR development enabled us to: 1) grow PGR recruitment by over 30% while maintaining a sustainable ratio of 1:1 between PGR numbers and academic staff FTE across the unit area; 2) provide training opportunities for staff members and PGR students to develop their professional skills and competencies (supported through internal and external funding such as EU REA schemes, Skill Sets and CDE centres); 3) review and balance individual workload plans annually to ensure each academic has significant hours and resources for research activities. Supporting the development of ECRs is a core element of our activity. Across the centres and departments, dedicated ECR support is in place (such as mentor support, peer-review, workshops, skill training, conference attendance). This complements the institutional level support and opportunities provided by RDS and the Doctoral College. Internal incentive funds were awarded to research active staff members (Zhang, Callus, You, et.al.) to seed future research

Unit-level environment template (REF5b)

fund bids and support the development of pilot research. All these reflect our core strategy in development of a research rich culture, which is collaborative, inclusive and resilient and well connected world-wide.

5. New routes of commercialisation and dissemination: About £10k/year investment is directly allocated to support the archiving and curation of digital works (code and artefacts) and exhibitions across the world. Isley and Smith (Lumen Prize winners) curated Robots in Distress at SUBMERGED SciArt Center Exhibition (New York, 2017) and AfterGlow (Susceptible, Exposed, Infected, 'Recovered') in the ArtScience Museum (Singapore, 2018). Birtles facilitated interactive light shows across the world, for example Submergence 2016 premiered at SIGGRAPH 2016 (California, USA) followed by events in Argentina, Czech Republic, Dubai, New Zealand and the UK; Phoenix presents Ocean of Light at Diwali (Leicester, UK, 2016); and Bloom Show in Canary Wharf (2017), Kew Gardens (2016), and Portugal (2017). Zhang exhibited the "Dr Inventor" project and delivered a tech talk at SIGGRAPH 2016 (California, USA) to pioneer innovation of AI to assist human creativity. The CDE's strategic industrial partnerships catalyse knowledge transfer cross-sections, where over 15 jointly funded research projects have been set up and industrial professionals act as external experts to contribute to PGR training and supervision. Our Innovate UK awarded projects support knowledge exchange and research collaboration: with Humain Ltd. (Facial Blendshapes tools, You and Bian, awarded the highest grade of 'Outstanding' and a Certificate of Excellence from InnovateUK) and ShoppAR Ltd. (novel AI assisted interactive content generation for advertising, Chang).

1.2.2 Future strategic plan

Our unit will continue pioneering research development in the digital creative sector, combining research excellence across the globe with impactful outcomes and contributing to the national strategy *to place the UK at the forefront of creative and cultural innovation* while cherishing difference, openness and diversity of talent. The unit's flexible and resilient structure will be strengthened further, with the two core centres (NCCA and EMERGE) acting as powerful research engines to gather complementary expertise, generate new knowledge and influence practice in multiple sectors. Under the direction of the two centres and related departments, formal project orientated research teams and informal research groupings paired by mutual interests will initiate and implement programmes of research.

Our purpose at BU is to inspire learning, advance knowledge and enrich society. We stress the importance of societally relevant research alongside continuing excellence - our research influences our curriculum and is passed on to industry through engagement with practice. In this context our unit's strategy is to continue with established approaches but with a more explicit focus on creative innovation and engaging productively with societal challenges. We will develop the strategic vision for the unit and address the priority areas in our Digital Future by:

1. Defining our distinctive research culture and communities by fusing science and technologies with art theory and practices in computer animation, VFX, digital media and related fields. Our unit will continue contributing to the definition and shaping of new landscapes of future digital technologies and art creation (adopting AI, novel Human Computer Interaction (HCI), new immersive experience into art practices and developing related theories and tools). This will generate worldwide impact through strategic investment into research and growth of talent in the areas. We will build on these strengths to deliver a range of new applications (including but not limited to: novel VR/AR usage, AI augmented and data driven art creation, innovation in visual content synthesis, new techniques for HCI, et al.), which can benefit society as a whole. This is in line with BU's strategic investment into the "Animation, Simulation & Visualisation" area and will support the growth of BU's research in related disciplines. The influence will propagate through collaboration with colleges and external experts in other sectors to support cross-disciplinary research, which will inspire impact beyond existing excellences in animation, VFX and digital media.

2. Encouraging international collaboration to catalyse innovative and experimental research and generate societal impact. We will keep refining our existing structures that enable

us to address social challenges through innovation by collaborating and acting globally. Strategically, we will develop further multi-disciplinary applications and artefacts through maximising national, EU, and international collaborations. Both internal resources (such as the global visiting fellowship scheme) and external funding will be sought to further and strengthen the existing excellences. One main target is to grow strategic partnerships and collaborative relationships outside the UK and EU, i.e. Asian countries, China, America and Africa. This will lead to a more balanced development path for growth and welfare by fostering innovation which generates social and public value.

3. Building on our robust academic footprint and enriching our external profile. We will continue developing our existing strengths and external links, where a priority is given to investing in people. It is recognised that realising our ambitions is dependent on the investment in and commitment of the unit's researchers. We will ensure our research environment continues to give our staff the freedom to discover new ways of thinking and supports them to deliver new research, applying equitable and fair performance systems that reward excellence. Staff appraisal and promotion process will be mapped to BU's fusion strategy (bringing together research, education and practice) and BU2025 strategy (inspiring learning, advancing knowledge and enriching society) to enable individual objectives to be aligned to the unit's main areas of research excellence. Research training programmes and development opportunities will enhance staff prospects and help them advance their careers.

4. Defining and setting priorities for investment to ensure sustainable growth of an industrial facing research ecosystem. We will invest in our high-quality research facilities and supporting infrastructure to benefit all researchers, including our cutting-edge motion capture lab, high-performance graphical workstations, new virtual production facilities, animation studios and VR/AR suites. Strategic investment in people and facilities will enable cross-disciplinary collaborations and the sharing of research resources among several units to generate intersectoral influence. The strategic investment area of "animation, simulation and visualisation" will collaborate with BU's other investment areas of "assistive technology" and "medical science" to enhance the impact and research potential, where our unit will be a core player and main initiator for the proposed research collaboration. Internal investment will seed and leverage funding successes and industrial collaborations in the related sectors to maximise outputs. This unit will work to develop and trace commercialisation and dissemination routes, expanding capacities to capture industrial and public engagement. We will pursue funding to reflect industry engagements including Knowledge Transfer Partnerships and networks developed through supervisor-PGR collaborations. Supported by all research groups, we will continue developing the NCCA as an influential knowledge exchange hub to increase the research capacity for the industries and transform the ecosystem in Dorset, offering skills and knowledge of "computer animation, computer visualisation, VR, AI, film and games" to leverage the growth of creative industries with innovation as well as creating exemplars of business-orientated research collaborations that lead to new products, new services, start-ups and jobs.

5. Promoting open research strategies and open research data archives. We aim to enhance the quality and value of research by encouraging and supporting open research to ensure better access to existing research data and publications. This supports our researchers' needs as both creators and users of data. BRIAN, BU's publication management system, (in connection with BURO repository) provides a single point of data entry that enables research information to be used in multiple places. Research data management support and training encourages staff members to engage with the open science agenda and add their datasets to BORDaR(BU's research data repository). We will continue enhancing the quality and accessibility of existing research outputs and data via both green (BURO repository) and gold (paid services) routes by supporting a growing culture and practice of open research.

In summary, as measurable outcomes and indicators of implementing these strategies, for next REF period we expect to increase research income up to 30% via research bids to research councils and industrial co-funded projects, to grow research capacity by increasing PGR recruitment by 20%, and invest up to £2M in infrastructure and computing resources (hardware

and software) to boost both research capacity and promote open research. We will continue providing high-quality development opportunities to staff and PGRs.

Resources and investment are and will be in position to support the strategy implementation and ensure a diversified open research environment to develop excellent research and generate impact. For example, the NCCA has secured a prestigious EU Marie Curie Fellowship, MultiFluid, to host a talented fellow to conduct two years full-time research at BU from 2021, which will lead to research outputs and innovation in fluid animation. The NCCA has invested in six fully funded PhD scholarships (about £400k) for five years to start from late 2020 to fuse AI innovation with computer animation generation. The EU Marie Curie COFUND scheme established the Centre for Applied Creative Technologies (CfACTs) from October 2020 and will jointly fund six post-doctoral research projects with total cost of £968k (€1.1million) at the NCCA with BU and industrial partners (Sony, Humain Ltd, et al.). This will promote international mobility of ECRs and accelerate the knowledge exchange among academic and industrial communities. Both the PhD scholarship scheme and the CfACTs will replicate the success of the CDE model but with an ambitious focus designed to deliver far-reaching, significant and diverse impact.

2. People

2.1 Staffing strategy and staff development

The staffing strategy for this unit supports four principal aims:

1. Research Excellence: Ensure that research excellence or potential are key criteria in staff appointments and promotion.
2. Inclusive research community: Fully support all staff in defining and developing research appropriate to career stage and expertise via mentoring and structured staff development.
3. Expanding PGR supervisory capacity: Support projected PGR growth and enhance PGR experience – including structured on-going supervisory development via the Doctoral College and increasing the number of staff involved in active supervision in the unit (also see section 2.2).
4. Embedding research strategy: Encourage and support staff to develop skills required to enhance impact generation and knowledge exchange, engagement and networking capabilities and further developing academic excellence – to develop future strategic priorities across the unit.

Recruitment, appraisal and promotion policies in this unit reflect the above staffing strategy to support and reward research excellence. Since 2014 there has been investment in fifteen new full-time appointments to promote research excellence and build an inclusive research community. This included seven new postdoctoral positions (Gingrich, Blazquez, Corrigan, et al.) which enabled us to appoint talented ECRs who contributed positively to the vitality of the research environment and whose research generated societal values and impacts. For example, Bian contributed to the industrial-driven “Facial Blendshapes” development to benefit the animation industry, while Chaudry participated in the core development of digital content for the “Vista AR” project. We hosted three Marie Curie Fellows - (Liang, Kang and Zhao: Liang became a full professor and Dean in China) - Europe's most competitive and prestigious research and innovation fellowships. These researchers boosted the unit's research capacities. External research projects also contributed to the cost of core staff time and overheads, facilitating the delivery of quality outcomes and providing capacity and funds to invest in further research (Chang, Callus, Zhang, You, et al.). In addition, we offered various opportunities and support for junior research assists (RAs) and part-time research assistants to embark on research tasks and develop their career. Their experience at BU became launch pads for them to take new senior positions in industry or in the academic world (e.g. Re became a lead artist at Dorset Creative).

Within this unit, since 2014 three ERs were promoted to professor (Tian, Chang, You) and four ERs were promoted to associate professor (Yang, Callus, et al.), further increasing our research potential and capacity. Several staff members have taken on senior research positions (Chang, Callus, You, Yang) and leadership roles (Southern, Callus, Xiao, Nait-Charif, Davis), achieving their personal career goals, developing excellent research and contributing to the growth of the unit's research capacity. For example, the Head of the Computer Animation Department (Southern) and Deputy Heads (Xiao, Nait-Charif) have significant responsibilities to steer

research, ensuring the environment is conducive to facilitating research excellence. An open, fair and transparent promotion process is in place to fuse research with education and professional practices, which values quality and excellences. Appraisals assess research performance against objectives as a main pillar in the employee performance, identifying development needs and ensuring appropriate balance of workload.

Staff development is core in our staffing policies. Significant investment in staff time has provided a carefully managed environment for research development, where each staff member has an allocation of time for research and professional practice (typically about 35% contract hours). This encourages staff members to develop and accelerate their research careers and develop influential research outcomes. Our unit has contributed significantly to the increase in the number of staff with a doctorate in FMC (51% in 2014 to 70% in 2020), which has created a more mature research environment in the unit and the faculty as a whole. Staff (Twycross, Isley, Sarafopoulos, et al.) have enrolled for PGR study using their research time; among them, Zia received a doctorate in 2020. Flexible arrangements are in place to conduct annual reviews (and changes) of the workload plan which is agreed between staff and their line managers.

Sabbatical leave is dealt with and approved at Faculty level – a colleague has taken the leave for a career break and further training. We encourage staff to undertake professional practice as part of their academic role and have created fractional joint roles to enable individuals (Pasko, Birtles, Smith and Isley) to maintain positions in external organisations while being active in research within the unit.

Staff have access to high-quality research training and development resources targeted to various career stages: including specialised support for ECRs, mid-career academics and research leaders. We are committed to aligning process and practice to the UK Concordat to Support the Career Development of Researchers and, therefore, improving the working conditions and career development for research staff. Senior managers and mentors are in place for all academic staff to support career development planning. BU provides intensive training and expert mentor support for bid writing and development: Yu, You, Chang, Callus, Yang, Southern, Nait-Charif, et al. benefited from such development opportunities, the value of which is evidenced by their success as PIs for many projects. We provide valuable opportunities for research leaders (Southern, Callus, Nait-Charif, Chang, You, Tian, Yang) to further develop their leadership capability, build up their research team and enable them to achieve their career ambitions as well as the strategic aims of the unit.

Within this unit, supervisors and mentors are supporting peers (different career stages, including ECR) to achieve their career targets and deliver high-quality research outputs through research collaboration and mentor support. For example, Zhang supported several staff members (Southern, Chang, et al.) to maximise their research potential and worked with them to develop research outputs, successful research bids and impact (with research outputs published at influential conferences: SIGGRAH, SIGGRAPH ASIA, CVPR, and in prestigious journals: Pattern Recognition, IEEE TVCJ, TOG, CGF).

The importance of **ECRs' personal and career development and lifelong learning** is clearly recognised and promoted at all stages. Our unit recognises and offers different routes available to enable ECRs' transition to independence. The ECRs enjoy rich opportunities and training workshops to build up their knowledge, expertise and skills. They collaborate and participate with other members in various research projects based on mutual interests. A flexible structure with wide networking (e.g. broad industrial connection via the CDE) is an incubator to grow their capacity in multiple disciplines and create cross-sectoral influence, where they can collaborate with experienced scientists, artist and directors. Rich collaboration opportunities and well-aligned comprehensive training programmes enable them to achieve personal career development goals - conducting multi-disciplinary research and art practices that strengthen their competencies and open new research themes (see aforementioned success of Bian, Chaudry, and Liang).

We support the BU Research Staff Association (Chaudry is the Faculty representative) and BU's ECR Network.

Internal funds are available to support staff to conduct various research activities, including conference organisation (BFX 2012-2019, CASA 2020) and international workshops (AniNex 2015, 2016 and 2017; Aniage workshop and Dr Inventor workshop at SIGGRAPH), art exhibitions and research projects. A variety of sources of seed funding are available to support researcher development at the university and department level and within the unit (ECRs are assigned priority when applying for such funds). We invest internal projects to pump prime strategic development and research bids which are in line with the research priorities of major funders and address the needs of the digital creative sector. This diversifies the profile of research activities and stimulates impact-rich projects. The seed funding is complementary to other resources and provides essential support for ECRs to become the next generation of research leaders. The NCCA and the EMERGE received an annual development budget (£20k) to invest in project development until 2017, (a similar amount was then distributed at departmental level to support building up research capacity after 2017), which supported staff research travel and research disseminations, and invested in new research facilities (VR hardware and 3D printers). The dissemination fund also supports individuals' conference participation, exhibition and performance, e.g. Isley received funds to support travel and collaboration with researchers of University of Glasgow to install an art exhibition to reflect the ecological importance of pearl mussels and led to three workshops in the local area.

Resilience in leadership is a key element to successful delivery of the research works, practical art exhibitions and installations as aforementioned, where the complexity of the management of creativity and innovation in this unit is recognised. Our unit is led by an innovative and visionary leadership team who embed the research strategies and support the wellbeing of staff members. Our unit provides opportunities to reflect on individuals' skills as leaders and to develop these further as role models and motivators for others to follow, creating a culture of continuous improvement. We envisage the growth of our leadership capacity helps forge strategic research projects – professors jointly with senior academics. For example, Zhang leads both the NCCA and the CDE; Chang, as a recently promoted Professor, leads the EU COFUND centre, "CfACTs"; You, also a recently promoted Professor, led the strategic international exchange project "PDE-GIR" funded by H2020 and an industrial KTP with Humain Ltd, funded by Innovate UK.

We support staff to develop **sustainable relationship with industry and international peers** to promote research collaborations and impact generation. We organise regular invited talks from industry. We paired academic supervisor and industrial supervisors to support PGR trainings in CDE. Since 2014, we hosted over 20 international visiting scholars (including professors, lecturers, and ECRs), funded by H2020, CSS, BU global fellowship and other sources. More collaborations are listed in section 4.

2.2 Research students

This unit has supported the fast-growing student cohort, both academically and by enhancing the PGR student experience. The PGR community has grown from 28 (REF2014) to 36 (REF2021) in this unit. Research students form a major component of our strong research culture, pursuing innovative and specialist lines of enquiry and application. The composition of our research community is diverse and multi-cultural (54% international PGRs), with students originating from China, Russia, India, Turkey and from across Europe. Our unit's PGR population has a healthy gender split, with 42% of PGR students identifying as female and 58% as male.

Our unit benefits from institutional initiatives to improve the PGR experience. The central Doctoral College was established in 2017 to provide enhanced support to PGRs and provides our researchers with high-quality training and development based on Vitae's Researcher Development Framework. Our doctoral supervisors are required to undertake training every three years. We also increased the number of staff involved in active supervision in the unit: new supervisors since 2014 include Callus, Chaudry and Anderson.

Unit-level environment template (REF5b)

Many PGR candidates (77.8%) are supported by the generous scholarship schemes (fully- and matched- funded doctoral studentships, both internally and externally funded). Scholarship opportunities are advertised at jobs.ac.uk and findaphd.com to reach a wide audience and encourage a diverse pool of applications. In addition to the external funded scholarship of CDE (EPSRC), CSC and AHRC, this unit has benefited from over ten match-funded PhD projects (with funding from BU and industrial partners). As part of our outreach programme, we successfully assisted international students in the preparation of research proposals in order to secure funding from their home governments; thus, the unit secured funding for six students from the CSC.

Since 2014, we launched a full e-recruitment system for PGRs and a new PGR monitoring system “Research Pad”, representing BU investment in PGR development. This reduces the administration burden and allows supervisors to track students’ progress and development effectively. The online tools and apps supported PGR virtual supervision in the lockdown phase due to Covid-19.

All PGR students are managed through BU processes – with additional admission processes for CDE students reflecting the focus on industrial partnership. Robust support and monitoring processes help to increase the PGR completion rate; 12.17 PGRs completed in the REF2014 period and this increased to 41.33 completions in the REF2021 period. PGR progress and development milestones are tracked regularly by supervisors and research administrators.

At department level, we aim to create an inclusive, global community of PGRs, allowing them to make connections and network with other PGRs and academics. PGR students have dedicated space and computing or workshop facilities. They attend, help organize and participate in the regular research seminars. They participate actively in the annual BU PGR conferences and international conferences. Supervisors guide students’ professional and personal development through a Researcher Development Programme organised by the Doctoral College, where faculties and departments provide subject-specific training and day-to-day support. Each PGR has access to funding (£3k per student) from BU to support their personal training, conference attendance and purchase of research facilities/services.

The CDE has supported 55 doctoral students since its establishment in 2009, equally divided between Bournemouth and Bath universities. Each student receives the EPSRC stipend for their living (£16,509 in 2019/20). Each student is supervised by an academic and an industry supervisor. The biannual CDE conference allows students to present their findings to the group and encourages the development of a cohort culture. They take part in games jams, summer schools and international conferences. Such activities include SIGGRAPH in the USA and Canada, Digital Economy Summer Schools, CHI, IEEEVR and many more. With 50 live projects with 40 companies, the CDE offers excellent opportunities for participants and generates significant impact in both commercially and benefiting societies in various sectors. PGR students and their supervisors contributed to a range of industrial orientated development: e.g. investigating the automatic generation of 3D content by using existing 2D character animations while maintaining the 2D advantages in 3D (Barbieri, partnered with Bait Studio); cutting-edge flow simulation and visualisation for better design of biological activated sludge treatment (Matko, based in Wessex Water); encouraging immersive learning and knowledge retention through short-form with proficiency analysis in virtual reality training (Matthews, partnered with AISOLVE); material based vehicle deformation and fracturing for game design (Ball, in UBSOFT). The strategy of integrating the research with the industrial needs provides a core focus for sustainable growth of the centre.

Our PGRs are fully integrated within the labs and research centre, where close relationships with their supervisors are nurtured and valued. They are networked with peers and form an inclusive PGR community, from which new students benefit - “It is useful to attend the various social events..., allowing me to meet other PhD students and really make the most of my time at BU away from my studies” (quote from Weber, a student representative). Support at several levels to benefit PGRs’ study and welfare is highly valued by the PGR community.

We firmly support the PGRs with their future career development. Many PGRs are offered opportunities to undertake short-term training based in industry and other universities (Nie, Zhang, Notman, et al.). Supervisors have supported many fresh PGR graduates/alumni to find job opportunities, advance their careers and take senior positions through their network: e.g. Canon (Post-Doctoral Researcher, BU), Jiang (leading software developer, Framestore); Zhang (Lecturer, Cardiff Metropolitan University); Qian and Deng (Post-Doctoral Researchers, King's College London); et al. CDE offers many connections to industry, supported by both industrial and academic supervisors, CDE students can often continue their employment at the same host company after their study owing to the quality of their research, connections, experiences and training.

Many of the PGRs are members of the European Communication Research and Education Association, supporting an excellent Young Scholars Network.

We hosted over 20 visiting students (in addition to the aforementioned 20 visiting scholars) for short-term or long-term research training and research development, funded by other universities and various projects, including the CSC funds, AniNex (Zhang, €432k), PDE-GIR (You, €35k) and AniAge (Yu, €1.7million). The visiting PGR programmes and mobility offer a stimulating research environment for emerging international scholars to conduct research of the highest quality and contribute to the research activities in their disciplines. For example, the visiting PGR students from Hong Kong, Thailand, Malaysia and Vietnam in AniAge contributed to research work and innovation in order to preserve the intangible cultural heritage contents of Southeast Asia. Yang also holds a BU Global Visiting Fellowship award to support collaboration and bilateral visits with Pan and the team from Beihang University, China. Jointly, this has led to an influential UK-China workshop of "Digital Innovation for Surgery Planning, Simulation and Treatment" in 2019 (supported by British Council, Newton Fund, and National Natural Science Foundation of China).

2.3 Equality and diversity

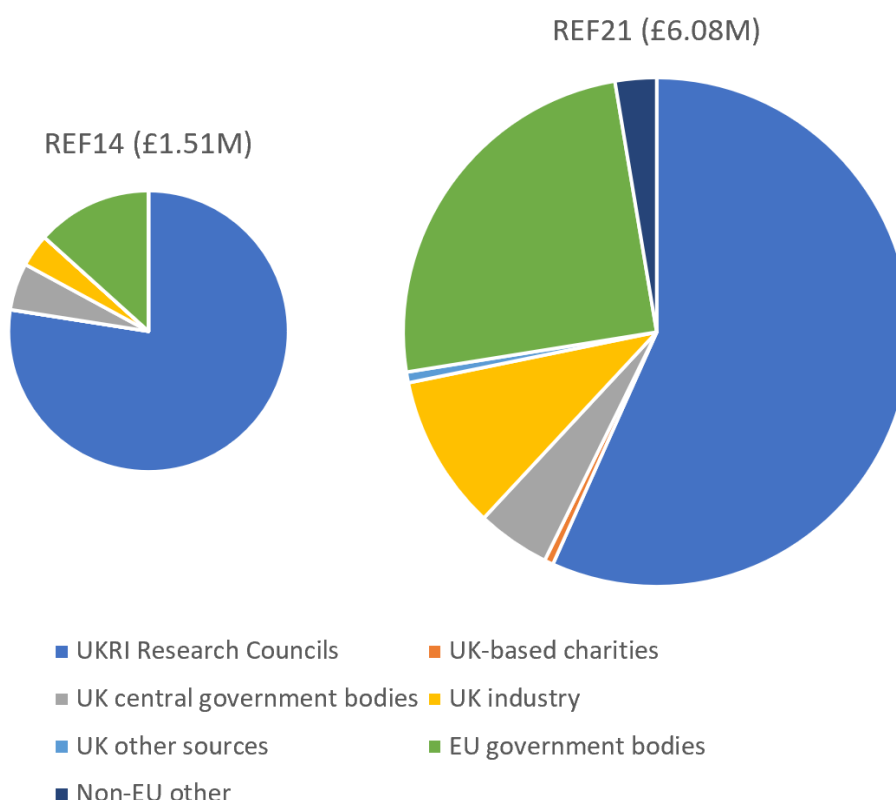
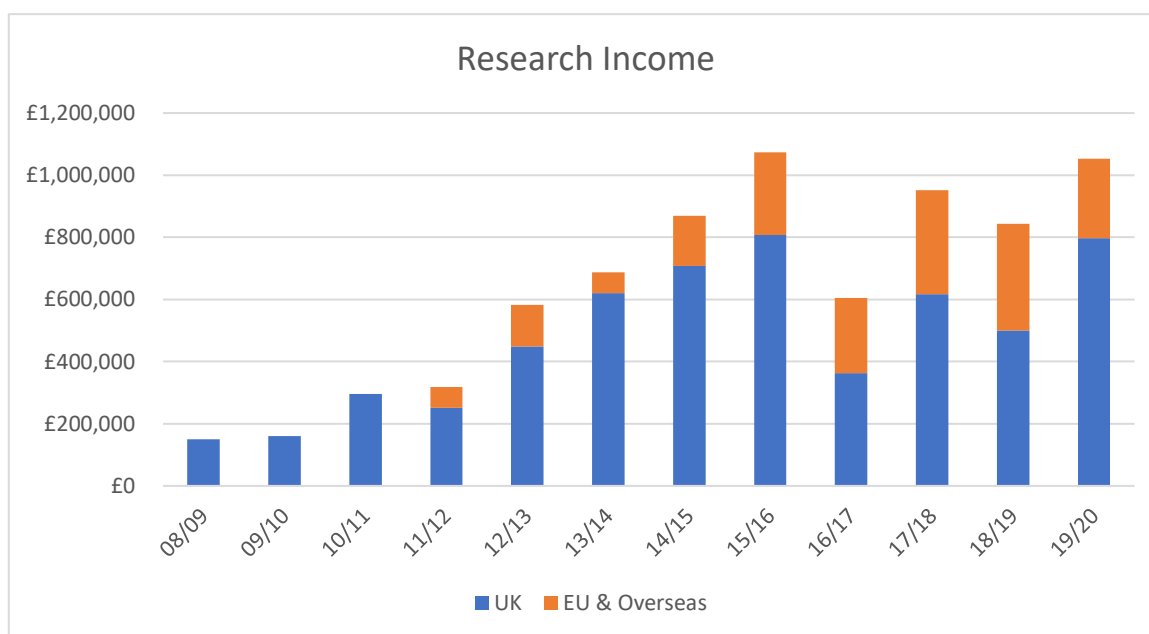
This unit promotes equal opportunities and outcomes by adopting flexible working practices and supporting family and work-life balance, which has helped many staff (including staff with young children, staff with disabilities and staff returning from sick leave) to continue to engage actively in research. One third of staff in the unit are from Black, Asian and minority ethnic backgrounds, which makes the unit the most racially diverse at BU. This aligns with our staffing strategy to recruit and retain a global and diverse team of researchers. Fast adoption to "working from home" mode since April 2020 has enabled the unit to further embrace flexible working practices to benefit all staff. This ensured continuity of research activities to mitigate the impact of Covid-19, where remote supervision via virtual meetings and online collaboration platform supports all staff and PGRs.

Gender dimension: BU is a member of the Athena SWAN charter and retained its Bronze Institutional Award in 2019. The Department of Computer Animation is pursuing actively an Athena Swan Bronze Departmental Award, aiming to submit in 2021. There is a lively departmental Swan self-assessment team and changes are being made to the research environment in response to this. We are addressing the underrepresentation of female staff in the unit (12.8% female, 87.2% male) and our recruitment strategy is designed to achieve a more balanced gender profile, in line with our PGR cohort (42% female, 58% male). The unit has embedded gender equality in the recruitment process of PGRs and researchers. For example, all shortlisting and interview panels are gender representative and gender balanced wherever possible. We create an environment that recognises and promotes the contributions women make to academia and to the wider professional field. Callus (recently promoted to Associate Professor) in the NCCA has led research development and generated impact through her work on socio-political commentary in African animation. Callus collaborated with researchers from many institutions in Nigeria, Kosovo and Rwanda, and her research is supported by the AHRC and BU's Global Challenge fund. Sloan and Moore are key contributors to the NCCA 30 years animation exhibition (funded by the Arts Council), 'Once upon a time in Animation' in collaboration with Poole Museum. Troisi curated the coastal aural archive of space and time to inform policymakers to better understand how the community perceives landscape, cultural, environmental, and economic changes in the area

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(CoaAST funded by AHRC/GCRF). Isley, a renowned artist, has curated many international art shows and exhibitions of creations, which are inspired by diversity in nature. Tang (Professor) is a member of the research ethics panel and a member of the Strategic Investment Board. Tang is the lead developer of the BU Games Analytics Platform and is PI leading a total of >£2M (to BU) in funded projects (including H2020-MSCA-RISE-2018: iGame; Interreg 2 Seas: PATH; Interreg Channel: ASPIRE). The promotion of gender equality is always embedded in our outreach and public engagement work: for example, since 2012 we coordinated the BFX "Women in Animation" panel who discussed the professional barriers women still face in the discipline and addressed widely held misconceptions. This was supported by Animated Women UK to bring together women in animation companies, including the Walt Disney Company, Jellyfish Pictures, Lovelove Films, and Blue Zoo, to promote gender balance in media industry.

3. Income, infrastructure and facilities



In period 2013-2020, this unit was awarded over £6.08M in research funding, representing a significant four-fold increase in external income. We diversified the research income sources to ensure our research programmes are sustainable and broad (evidenced with increasing share from industry contribution, EU and overseas funding). We secured further funding for the EPSRC-funded Doctoral Training Centre, CDE. The large portfolio of funded research projects enabled us to develop innovative capacities to answer new challenges and apply our expertise to different sectors, e.g. Vista AR (BU takes a share of over €700k from the total €7.9M investment) developed digital innovation to benefit the heritage sector by creating new visitor experiences and implementing new marketing policies for the sustainable development of heritage sector. We participate in PATH (Tang, €438k, funded by ERDF, total project budget €8.5M) to develop a multi-media international support hub to address the challenge of preventing/supporting Perinatal Mental Illnesses providing a modern inclusive health infrastructure to improve perinatal experience and attachment in new families. ASPIRE (Tang, €615k, funded by ERDF, total project budget €10M) supports obese/overweight and/or unemployed people to make healthier lifestyle choices with a new model and tools. The Cross Channel Film Lab (CCFL) runs a programme of training to develop low to medium budget feature film projects in conjunction with new visual technology, linking partners in the UK and France (Comminos, €43k, funded by Creative Europe). ArtoP funded by the AHRC (Callus, £200k) studies the visual articulations of politics in Nigeria to produce impacts upon the societal understandings of Nigerian politics, African arts and their connections to technology. iGame funded by EU H2020 (Tang, €837k) investigates evidence-based gamification techniques for eHealth and mHealth and develops a multi-dimensional intervention support architecture/platform in order to improve the efficacy of gamified eHealth products (web-based health tools and health apps).

Significant funding sources are available to support international staff exchange and research collaborations to develop joint initiatives to tackle big technical challenges. These tend to focus on ECR training, with projects funded by the EU REA FP7 and H2020 including AniNex (Zhang, €432k), PDE-GIR (You, €535k), AniAge (Yu, €1.7M) and CfACTs (Chang, €1.1million). Supported by AniNex, multiple workshops on “Next Generation Computer Animation Techniques” engaged young researchers to network with peers and research leaders. AniAge developed technologies to preserve intangible cultural heritage items that might otherwise be lost with international efforts.

The unit secured funds to host three prestigious Marie Curie Fellows - AniStyle (Kang, €183k, from South Korea), AniM (Liang, €231k, from China) and CEDMMC (Zhao, €195k, from China). They conducted world leading research about data handling in animation production (AniM), strategies for mass customisation for jewellery (CEDMMC), and resolving key technical challenges for styled animation production (AniStyle).

We lead research projects that develop fruitful collaborations with companies in various fields, which are hungry to use new technologies such as VR/AR, novel HCI, and new art practices in their desire to generate new capacity and revenues for their customers. Such projects include a unique match-funded PhD scholarship path, e.g. two full scholarships with HDRI Ltd. (China) to develop new medical simulator technologies and innovation. Over 15 CDE projects (more details in section 2.2) are collaborated and co-funded with industrial partners, where the students and supervisors work closely with companies to produce business-orientated research outcomes (typically, a company invests an amount from £20-60k depending on the scale and nature of the project).

We have an increasing volume of independent demand-driven projects that benefit wider society, such as the two projects we have developed with the RNLI on novel motion capture on the sea and on new prototype visualisation for lifeboat launching; and “Neuravatar”, an intelligent virtual avatar to guide GPs to make neurological diagnosis in their clinical practice (Yang), funded by the Academic Health Science Network. Funding was received for social engagement projects, such as the digital Paisley Pearl (Smith and Isley) as part of Paisley’s 2021 City of Culture bid, creating 7.4 billion unique paisley pearls for every human alive on earth, AfterGlow (Smith and Isley) and Submergence (Birtles). These actively break down barriers between artist and audience. We have developed data-driven human facial modelling with Humain Ltd. (Innovate UK, £171k, You) and

Unit-level environment template (REF5b)

AI augmented interactive advertisement with ShoppAR Ltd. (Innovate UK, £150k, Chang). Both the “Rock Paper Film” animation studio (managed by Truckel, offering a unique platform for artists, technicians, and researchers to experiment new technologies) and the CDE function as inter-media to catalyse such collaboration and actively engage in the delivery of some projects.

BU invested significantly in the facilities and infrastructure to support the growth of this unit. This includes: facilities for TV (live and post production), audio studios, sound editing labs, media production spaces, green screen with motion capture suite, virtual production facilities, PC and Mac laboratories and cross-faculty collaboration spaces. These facilities are predominantly used by the FMC and the FST, directly benefiting our unit and its focus on “computer animation, VFX and digital media”.

The NCCA and the EMERGE have full access to the spaces and facilities in BU’s new Poole Gateway Building (£37M investment), which opened in spring 2020, where new labs, new production facilities and the new motion capture suite are located, supporting our research activities.

In addition, the NCCA invested significantly (estimated over £1.8M since REF 2014) to maintain and update its research infrastructure and facilities with the newest hardware and full suites computer animation development software to provide high-quality technical facilities that support research. PhD labs have expanded from one 20 seat lab to three labs with a total of 50 seats to ensure each PhD student has a designated PC and desk space. In addition, the NCCA has access to specialist items of equipment and work spaces including: a full industrial-grade motion capture system maintained by support staff, valued at £100k; a suite of state-of-the-art 3D printing devices worth approximately £30k, supported by a technical specialist; a high-end laser scanner, valued at £25k; VR and AR hardware and software valued at £30k; a studio space for art group projects, seminars and networking events and annual licences for numerous software packages Maya (Autodesk), Renderman (Pixar) and Houdini (Side Effects) for animation production and software development. Maintaining software licences relies on annual investment of £80-100k. Researchers and students are equipped with high-end workstations and equipment. Access to specialist equipment has directly influenced the research environment; for example, our expertise in and access to 3D scanning and modelling was instrumental in securing the VISTA AR project.

4. Collaboration and contribution to the research base, economy and society

In this REF period, we strengthened existing partnerships through sustainable research projects and developed many new partnerships across the globe: e.g. EU FP7 and H2020 with a particular focus on ECR training (AniNex, AniAge, PDE-GIR, CfACTs), where we developed broad research connections and collaborations with 28 universities and research institutions (University of Geneva, Switzerland, Université d’Artois, France, Charles Sturt University, Australia, Allen Institute for Brain Science, USA, The University of Hong Kong, National Cheng-Kung University, Taiwan, University of Bergen, Norway, Chiang Mai University, Thailand, etc.) in 15 countries (EU, Asia, China, Australia, USA, etc.). Pasko and colleagues have contributed to the HyperFun project, a long-term international free and open source software project for geometric design and visualisation. This established collaboration has contributors from the UK, Russia, Japan, France, USA and Norway. We developed sustainable relationships with China’s top institutions via EU funding, Newton Funds and other resources, including Tsinghua University, Zhejiang University, and Chinese Academy of Sciences. Chang and Zhang contributed to a specially orientated UK-China workshop to forge collaboration between China and UK in 2018, which involved 16 institutions. Isley has a longstanding working relationship with Dr Paddy Brock (University of Glasgow) on various projects, among them the award winning AfterGlow which has been displayed at 15 exhibitions across the world, including a British Council exhibition, Independent Short Film Festivals; QUAD, Derby; and Wellcome Collection, London. Our AHRC-funded projects CoaAST (partnered with National Museum of Kenya) and ArtoP (partnered with University of Wisconsin Madison, USA; University of Lagos, Nigeria; and Bayero University, Nigeria) built strong connections with African countries (Nigeria and Kenya) in visual art research and building artefacts archives. The Vista AR research project for better heritage visitor experience with digital innovation

has joined the research efforts of academics across the channel (BU, University of Exeter, EESAB, CESI, and Neoma Business School) and developed strong connections for the beneficiaries (Reginal Council of Brittany, Fougere Castle, Exeter Cathedral, National Trust Tin Coast, Southwest Coast National Trail, Jardins de Valloires, and Musee Sous-marin Lorient) to test the research outcomes and deploy the developed tools and products.

We appointed Prof Nadia Magnet Thalmann and Prof Neal White as Visiting Professors. Thalmann leads the Miralab at Geneva University, Switzerland, and the Institute for Media Innovation (IMI) in Singapore at Nanyang Technological University. Thalmann leads a pioneering and internationally renowned centre for research in Computer Animation. White is an interdisciplinary professor whose research explores the critical and cultural impact of artists' relationships with science and technology. White is a Director of CREAM, which is the leading research centre at the University of Westminster. Zhang, Chang, et al. have in turn paid research visits to several prominent research institutions, including Chinese Academy of Sciences, Nanyang Technological University, Zhejiang University.

Key industry collaborators: The CDE Doctoral Training Centre is a close collaboration between the NCCA, the University of Bath and over 40 industrial partners from the computer games and film industry. The establishment of long-term relationships with leading international researchers and industrial practitioners is manifested in our hosting of industrial and academic practitioners as visiting professors and honourable keynote speakers at public events. These include Paul Franklin (Double Negative), who twice won the Academy Award for his work on "Inception" and "Interstellar", Dave Throssell (film producer and founder of Fluid Pictures) and Will Gompertz (BBC Arts Editor).

In addition to the collaboration channels and networks provided via the CDE, other industrial partnerships are formed through personal relationships and externally funded projects: e.g. You worked with Humain Ltd. on a KTP project; Chang worked with ShoppAR on Innovate UK Smart Grants; Chang also with Sony, Humain Ltd, and Alex Studio on COFUND industrial-led postdoctoral projects.

The NCCA coordinates the International VFX Hub jointly with the Faculty of Media and Performance at the Arts University Bournemouth. It aims to raise the profile of Bournemouth as a centre of excellence for animation and digital VFX, build links with industry for both universities and provide commercial opportunities to students, graduates and academic staff.

We have hosted an international film and visual effects festival - BFX (<http://www.bxfestival.com/>) - annually, attracting over 1,000 visitors in 2018 and 2019. Its film production competition, partnered with the Creative Vision Award, has received enviable support from over twenty mentors from famous VFX companies (Rob Hopper of MPC, Patrick Finn of Double Negative, Tom Box of Blue Zoo, et al.). It has offered great networking and collaboration opportunities for academics, PGR students and industrial practitioners.

Our Industrial Advisory Board consists of practitioners from leading animation, special effects and games companies including: Industrial Light and Magic, Dreamworks, Double Negative, the Moving Picture Company, Framstore and Sony Computer Entertainment Europe. The Board meets regularly, sharing industrial experience. This is used to shape and inform our research programmes and the unit's direction.

Editorial work, positions and measures of esteem: Collectively, staff in the unit have chaired 12 international conferences and given 8 keynote/invited talks (e.g. Zhang, Chang, Yang, Tian). Researchers are editors of eight international journals (including Computers and Graphics, The Visual Computer and Virtual Reality), have acted as external PhD examiners at least 16 times and are (or have been) on the programming committees of at least 36 international conferences since 2014. Chang acted as program co-chair for the Computer Graphics International Conference 2019 in Calgary, Canada, one of the oldest international annual conferences in Computer Graphics and one of the most important worldwide. Chang and Zhang co-edited a book on Next Generation

Unit-level environment template (REF5b)

Computer Animation Techniques (2017). Most staff (Callus, Xiao, Nait-Charif, Chang, Zhang, Southern, et al.) have been responsible for reviewing journal and conference papers for publication (typically 5-10 papers per person annually). The NCCA hosted many research workshops (AniM, AniAge, AniNex, Dr Inventor, UK-China) and co-organised Edutainment Conferences 2017 and CASA 2020.

Other supporting information: The NCCA was praised by Sam Gyimah MP, the then Universities Minister, during his keynote speech at the HEPI Annual Conference in 2018, “Take Bournemouth University’s computer animation and visual effects courses, whose graduates have gone on to work on some of the biggest movies of the past decade.”

The Tech Nation 2017 Report highlighted, “The seaside town of Bournemouth, home to digital creative agencies and big ambitions, is now making waves in education, healthcare and transport too. Its success is powered by strong graduate talent from the highly acclaimed National Centre for Computer Animation and Visual Effects at the University of Bournemouth, and an increasingly dynamic ecosystem.”

When he was Prime Minister, David Cameron praised Bournemouth University in the House of Commons (12/02/2015), “When we look at film and television and we see the great results at the BAFTAs, the high hopes we have for the Oscars [and] British film and television conquering the world, Bournemouth University plays a very important part because its training of some of our VFX specialists [and] because of many of our creative people – [are] an absolutely key part of this vital and growing industry.”